SEVENTH BI-MONTHLY PROGRESS REPORT
UNIVERSITY OF ALASKA
ERTS-1 PROJECT 110-3
September 30, 1973

TITLE OF INVESTIGATION: Identification, definition and mapping of terrestrial ecosystems in interior Alaska

PRINCIPAL INVESTIGATOR: J. H. Anderson. UW 592

PROBLEMS IMPEDING INVESTIGATION: None

PROGRESS REPORT:

1. Accomplishments during the reporting period:

a. A 1:63,360-scale vegetation map of part of test area no. 5 was drawn, using an enlargement of part of ERTS-1 scene 1033-21011. This map has yet to be labeled and transferred to the U.S. Geological Survey quadrangle of the same scale. To illustrate this work, a part of the unfinished map is presented on the following page.

b. A vegetation map at a scale of 1:1,000,000 was drawn for part of test area no. 5 and adjacent terrain, using the same scene. This map also is unfinished, but a preliminary version is presented on page 3.

c. Several new scenes were selected for study. At least partial growing season coverage for all test areas north of the Alaska Range except no. 4 is now available. These scenes are listed on the image descriptor forms.

d. Digital data CDU scenes were examined for test areas 5, 6 and 8.

e. A small interband ratio study involving sites in test area no. 6 was made using the CDU.

f. In a meeting with project 2 personnel, all persons were brought up to date on the status of their ERTS activities.

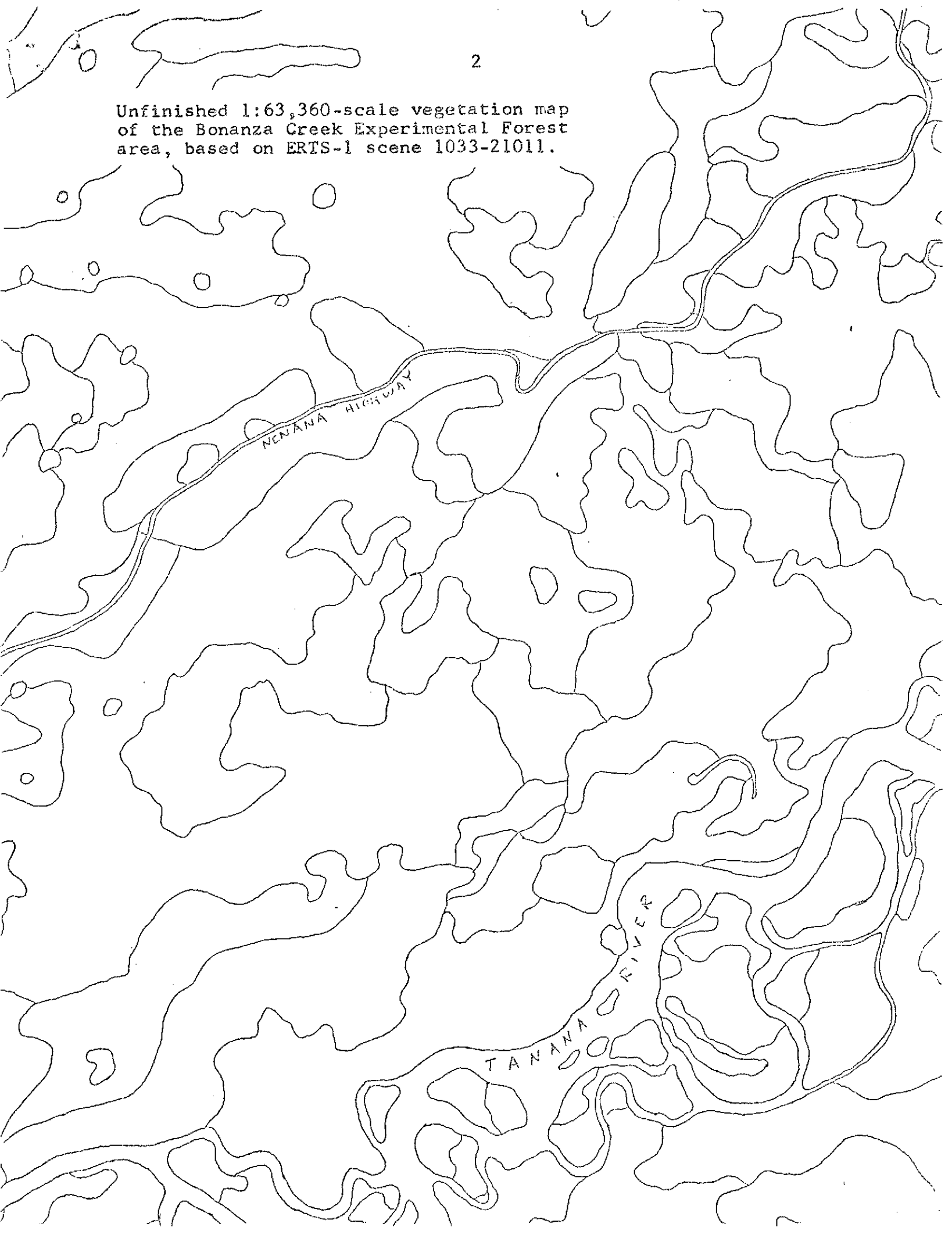
2. Plans for the next reporting period:

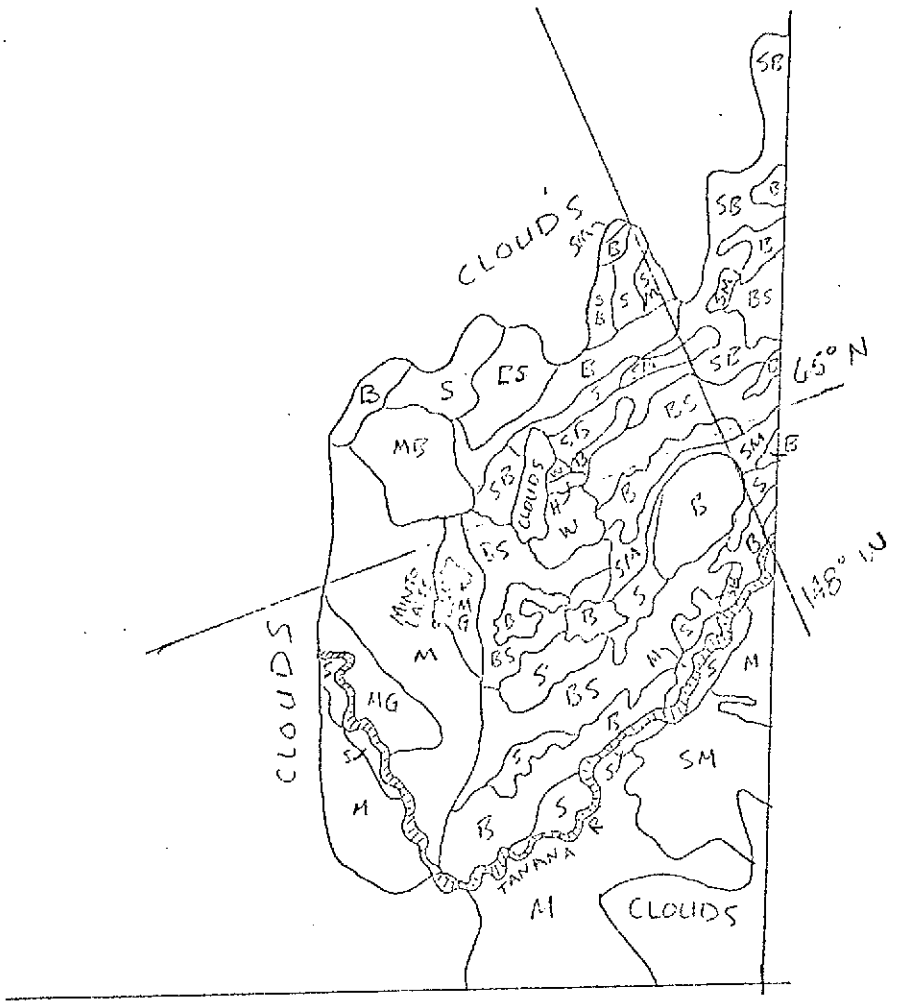
The plans listed on page 16-17 of the recent semi-annual report for this project pertain.

SIGNIFICANT RESULTS:

1. Results of the mapping efforts are presented on pages 2 and 3. It is emphasized that these maps are unfinished.

Unfinished 1:63,360-scale vegetation map of the Bonanza Creek Experimental Forest area, based on ERTS-1 scene 1033-21011.





Vegetation map of the Bonanza Creek Experimental Forest and vicinity at a scale of 1:1,000,000, based on ERTS-1 scene 1033-21011. See text for vegetation unit designations.

Brief designations:

B	Birch forest	H	Alpine tundra
S	Spruce forest	M	Muskeg and bog
BS	Birch-spruce forest	SM	Spruce muskeg
SB	Spruce-birch forest	MB	Muskeg with hardwoods
W	Scrub	MG	Muskeg with graminoids

Vegetation units recognized on the 1:1,000,00 scale map are as follows:

B = Birch forest, with aspen a secondary admixture in many places and a dominant species on a few sites

S = Spruce forest; mostly white spruce, but with black spruce a secondary to major admixture in many places and a dominant in some places

BS = Birch-spruce forest; mosaics of stands of birch and spruce forest and mixedwood forests, where birch is more important areally

SB = Spruce-birch forest; same, but with spruce the more important areally

W = Scrub. Mostly willows; alders and shrub birches important in some areas

H = Alpine tundra vegetation, comprising herbs, low-growing shrubs and sparsely vegetated areas

M = Muskeg and bog: Low-lying, flat areas characterized by abundent mosses, including Sphagna, and by lichens, graminoids, forbs, low-growing shrubs and scattered black spruce

SM = Spruce muskeg: Muskeg as above, but with black spruce a major component

MB = Muskeg with borad-leaved trees and shrubs: Muskeg as above, with abundant water-courses and raised areas where birch, aspen, willows and alders occur

MG = Muskeg with graminoids: Muskeg as above, in particularly poorly drained areas where woody species are less important and mosses and graminoids predominate

At this point, the mapping activities tend further to substantiate the belief that ERTS-1 imagery is a valuable mapping tool.

2. Some of the newly selected scenes show that vegetation interpretations can be refined through use of non-growing season imagery, particularly through the different spectral characteristics of vegetation lacking foliage and through the effect of vegetation structure on apparent snow cover.

3. It appears that digital color displays will permit spectral distinctions which might be overlooked or made only with uncertainty on photographic products.

4. No support was obtained for the hypothesis that similar interband ratios, from two areas apparently different spectrally because of different sun angles, would indicate similar surface features. However, attempts to test this hypothesis have so far been casual.

PUBLICATIONS: None

RECOMMENDATIONS: None

REVISED STANDING ORDERS: None

ERTS IMAGE DESCRIPTOR FORMS: See attached

DATA REQUESTS: None

ERTS IMAGE DESCRIPTOR FORM

(See Instructions on Back)

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ID

DATE September 30, 1973

PRINCIPAL INVESTIGATOR J. H. Anderson

GSFC 592

ORGANIZATION University of Alaska

PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
1283-20511 1284-20565 1338-20555 1374-20552 1321-21012 1339-21011 1339-21013 1341-21123 1342-21175				Aerial imagery used Briaded stream Brush Conifer Deciduous Forest Ground truth used Hardwood forest Highway Lake Mature vegetation Meander Muskeg River Timberline Tundra Urban area Vegetation

*FOR DESCRIPTORS WHICH WILL OCCUR FREQUENTLY, WRITE THE DESCRIPTOR TERMS IN THESE COLUMN HEADING SPACES NOW AND USE A CHECK (✓) MARK IN THE APPROPRIATE PRODUCT ID LINES. (FOR OTHER DESCRIPTORS, WRITE THE TERM UNDER THE DESCRIPTORS COLUMN).

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ERTS IMAGE DESCRIPTOR FORM

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PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
1286-21070 1358-21061 1376-21060 1340-21060 1342-21173 1358-21055 1377-21112 1325-21230				Aerial imagery used Airfield Alluvial plain Bay Coast Coastal plain Delta Dormant vegetation Frozen lake Frozen soil Ground turth used Industrial area Mature vegetation Oil field permafrost river Road Tundra Vegetation

*FOR DESCRIPTORS WHICH WILL OCCUR FREQUENTLY, WRITE THE DESCRIPTOR TERMS IN THESE COLUMN HEADING SPACES NOW AND USE A CHECK (✓) MARK IN THE APPROPRIATE PRODUCT ID LINES. (FOR OTHER DESCRIPTORS, WRITE THE TERM UNDER THE DESCRIPTORS COLUMN).

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DISCIPLINE: Environment

SUBDISCIPLINE: Other: Vegetation analysis, mapping and phenology

SUMMARY OF SIGNIFICANT RESULTS:

Two new, as yet unfinished vegetation maps are presented. These tend further to substantiate the belief that ERTS-1 imagery is a valuable mapping tool.

Newly selected scenes show that vegetation interpretations can be refined through use of non-growing season imagery, particularly through the different spectral characteristics of vegetation lacking foliage and through the effect of vegetation structure on apparent snow cover.

Scenes now are available for all test areas north of the Alaska Range except Mt. McKinley National Park.

No support was obtained for the hypothesis that similar interband ratios, from two areas apparently different spectrally because of different sun angles, would indicate similar surface features. However, attempts to test this hypothesis have so far been casual.